

ABSTRACT

A method for tuning a PID controller includes the steps of inducing equivalent relationships between PID gains of the PID controller and parameters of time delay control (TDC), selecting a natural frequency vector and a damping ratio vector so as to acquire a desired error dynamics of the closed PID control loop system, selecting a sampling time of the closed PID control loop system, determining the parameters of TDC on the basis of the natural frequency vector, the damping ratio vector and a closed loop stability condition for TDC, and selecting PID gains of the PID controller on the basis of the equivalent relationships.